

WHAT IS CLAIMED IS:

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5 1. An adsorption powder suitable for removing metals and organic compounds from a gas stream, wherein the powder comprises a carbon-based powder and an effective amount of cupric chloride to remove metals and organic compounds from vaporous components.

10 2. The adsorption powder according to Claim 1, wherein the carbon-based powder is selected from the group consisting of coal carbons, wood carbon, graphite carbon, activated carbon, fruit pits, coconut shell carbon, peat carbons, petroleum cokes, synthetic polymers, and combinations thereof.

15 3. The adsorption powder according to Claim 2, wherein the effective amount of cupric chloride is from about 1 to about 45 weight percent.

20 4. The method according to Claim 3, wherein the cupric chloride is selected from the group consisting of  $\text{CuCl}_2$ ,  $\text{CuCl}_3$ , and  $\text{CuCl}_4$ .

25 5. The adsorption powder according to Claim 4, wherein the powder further comprises a component selected from the group consisting of calcium hydroxide, sulfur, potassium permanganate, potassium iodide and combinations thereof.

30 6. The adsorption powder according to any one of Claim 5, wherein the powder comprises from about 10 to about 60 weight percent of carbon, from about 10 to about 70 weight percent of calcium hydroxide, and from about 1 to about 45 weight percent of cupric chloride.

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30 7. The adsorption powder according to Claim 6, wherein the powder comprises from about 30 to about 50 weight percent of carbon, from about 50

to about 70 weight percent of calcium hydroxide, and from about 2 to about 10 weight percent of cupric chloride.

8. The adsorption powder according to Claim 7, wherein the  
5 powder comprises about 40 weight percent of carbon, about 60 weight percent of calcium hydroxide, and about 5 weight percent of cupric chloride.

9. The adsorption powder according to Claim 5, wherein the  
10 powder comprises from about 30 to about 50 weight percent of carbon, from about 45 to about 70 weight percent of calcium hydroxide, from about 1 to about 10 weight percent of sulfur, and from about 1 to about 15 weight percent of cupric chloride.

10. The adsorption powder according to Claim 9, wherein the  
15 powder comprises from about 35 to about 45 weight percent of carbon, from about 50 to about 65 weight percent of calcium hydroxide, from about 2 to about 8 weight percent of sulfur, and from about 4 to about 12 weight percent of cupric chloride.

11. The adsorption powder according to Claim 10, wherein the  
20 powder comprises about 38 weight percent of carbon, about 58 weight percent of calcium hydroxide, about 4 weight percent of sulfur, and about 4 weight percent of cupric chloride.

12. The adsorption powder according to Claim 5, wherein the  
25 powder comprises from about 25 to about 45 weight percent of carbon, from about 40 to about 60 weight percent of calcium hydroxide, from about 2 to about 10 weight percent of sulfur, from about 5 to about 15 weight percent of potassium permanganate, and from about 1 to about 15 weight percent of cupric chloride.

13. The adsorption powder according to Claim 12, wherein the  
30 powder comprises from about 30 to about 40 weight percent of carbon, from about 45

to about 55 weight percent of calcium hydroxide, from about 3 to about 8 weight percent of sulfur, from about 7 to about 12 weight percent of potassium permanganate, and from about 2 to about 10 weight percent of cupric chloride.

5            14.    The adsorption powder according to Claim 13, wherein the powder comprises about 34 weight percent of carbon, about 52 weight percent of calcium hydroxide, about 4 weight percent of sulfur, about 10 weight percent of potassium permanganate, and about 5 weight percent of cupric chloride.

10           15.    The adsorption powder according to Claim 5, wherein the powder comprises from about 25 to about 45 weight percent of carbon, from about 45 to about 60 weight percent of calcium hydroxide, from about 1 to about 15 weight percent of potassium iodide impregnate onto a carbon substrate, and from about 1 to about 10 weight percent of cupric chloride.

15           16.    The adsorption powder according to Claim 15, wherein the powder comprises from about 30 to about 40 weight percent of carbon, from about 50 to about 55 weight percent of calcium hydroxide, from about 5 to about 10 weight percent of potassium iodide impregnate onto a carbon substrate, and from about 5 to  
20    about 10 weight percent of cupric chloride.

             17.    The adsorption powder according to Claim 16, wherein the powder comprises about 35 weight percent of carbon, about 55 weight percent of calcium hydroxide, about 5 weight percent of potassium iodide impregnated onto a  
25    carbon substrate, and about 5 weight percent of cupric(II)chloride.

             18.    The adsorption powder according to Claim 16, wherein the powder comprises about 35 weight percent of carbon, about 50 weight percent of calcium hydroxide, about 10 weight percent of potassium iodide impregnated onto a  
30    carbon substrate, and about 5 weight percent of cupric(III)chloride.

19. The adsorption powder according to Claim 16, wherein the powder comprises about 35 weight percent of carbon, about 50 weight percent of calcium hydroxide, about 10 weight percent of potassium iodide impregnated onto a carbon substrate, and about 5 weight percent of cupric(IV)chloride.

20. The adsorption powder according to Claim 5, wherein the powder comprises from about 10 to about 45 weight percent of potassium iodide impregnated onto a carbon substrate, from about 45 to about 55 weight percent of calcium hydroxide, and from about 1 to about 45 weight percent of cupric chloride.

21. The adsorption powder according to Claim 20, wherein the powder comprises about 38 weight percent of potassium iodide impregnated onto a carbon substrate, about 52 weight percent of calcium hydroxide, and about 10 weight percent of cupric chloride.

22. The adsorption powder according to Claim 20, wherein the powder comprises about 10 weight percent of potassium iodide impregnated onto a carbon substrate, about 45 weight percent of calcium hydroxide, and about 45 weight percent of cupric chloride.

23. The adsorption powder according to Claim 5, wherein the powder comprises about 10 weight percent of potassium iodide impregnated onto a carbon substrate, about 30 weight percent of activated carbon, about 50 weight percent of calcium hydroxide, and about 10 weight percent of cupric chloride.

24. The adsorption powder according to Claim 1, wherein the powder is useful for removing metals selected from the group consisting of mercury, lead, nickel, zinc, copper, arsenic, cadmium and combinations thereof from vaporous streams.

25. The adsorption powder according to Claim 1, wherein the powder is useful for removing organic compounds selected from the group consisting of furans and dioxins from vaporous streams.

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